

April 25, 2016

Corpus Christi Business and Job Development Corporation  
1201 Leopard Street  
Corpus Christi, TX 78401

Dear Corporation Members:

On behalf of Texas A&M University-Corpus Christi, I respectfully submit this letter as a request for two million dollars in funding from the Corpus Christi Business and Job Development Corporation to assist in expanding our School of Engineering and Computing Sciences to include bachelor's degrees in civil and industrial engineering.

We sincerely appreciate your previous attention to the community's need for the mechanical and electrical engineering programs, as these programs were made possible, in part, by the support of the Type A Board. We will similarly be leveraging support from the Type A board for civil and industrial engineering with additional funding from the community and the State, which is anticipated to be greater than two million dollars.

The funds requested from the Business and Job Development Corporation will be used to support capital expenses, especially the creation of laboratories that meet the physical and computing demands of civil and industrial engineering disciplines. The impact of this funding will be training additional civil and industrial engineers to support our local workforce demands, anticipated retirements, and expansion of the Port and other industries.

Funds received in the past from the Business and Job Development Corporation for mechanical and electrical engineering helped support success of the programs, as evidenced by enrollment numbers exceeding projections and ABET accreditation being achieved earlier than anticipated. Such growth continues with the award of bachelor's degrees in mechanical and electrical engineering, with 50 degrees conferred in 2015, which is nearly quadruple the number in 2011.

Again, please accept my gratitude for the support that the Corpus Christi Business and Job Development Corporation has given to Texas A&M University-Corpus Christi's Engineering Program.

Sincerely,



Flavius C. Killebrew  
President/CEO

/plg

## **Executive Summary**

Texas A&M University-Corpus Christi requests \$2 million from the Corpus Christi Business and Job Development Corporation for capital improvements to support the addition of civil and industrial engineering degree programs for the purpose of providing training and education to ensure the knowledge and skills required for local future job demands are met. The University will be leveraging support from the Corpus Christi Business and Job Development Corporation with additional funding from the community and the State of at least one-to-one match.

The funds requested from the Business and Job Development Corporation will be used to support capital expenses, especially the creation of laboratories and equipment that meet the physical and computing demands of civil and industrial engineering disciplines. The impact of this funding will be training civil and industrial engineers to support our local workforce demands, anticipated retirements, and expansion of the Port and other Coastal Bend industries.

Funds received in the past from the Business and Job Development Corporation for mechanical and electrical engineering helped support success of the programs, as evidenced by enrolled numbers exceeding projections and ABET accreditation being achieved earlier than anticipated. The \$2 million received from the Business and Job Development Corporation for mechanical and electrical engineering was matched with more than \$7 million from State and community support. Today, in mechanical engineering alone, more than 400 students are enrolled, which brings \$15.9 million directly into the Corpus Christi economy<sup>1</sup>. Additionally, many of the 81 graduates (as of summer 2015) have been hired as part of the next generation of engineering leaders working throughout Texas and the Coastal Bend.

### **Proposed Degree Programs**

#### **Bachelor of Science in Civil Engineering (BSCE) Bachelor of Science in Industrial Engineering (BSIE)**

Texas A&M University-Corpus Christi is an expanding, doctoral-granting institution committed to preparing graduates for lifelong learning and responsible citizenship in the global community. We are dedicated to excellence in teaching, research, creative activity and service. Our supportive, multicultural learning community provides undergraduate and graduate students with a challenging educational experience. The university's federal designation as a Hispanic Serving Institution provides a foundation for closing educational gaps, while its strategic location on the Gulf of Mexico and on the cultural border with Latin America provides a basis for gaining national and international prominence. The University's intention of expanding engineering bachelor of science degree programs with the addition of civil and industrial engineering is to help meet the needs of regional industry workforce demands, address Texas workforce challenges in a changing labor market, and train engineers for the knowledge and skills required for the jobs of the future.

Texas A&M University-Corpus Christi is committed to following the recommendations of the Coordinating Board's March 2010 report, *Projecting the Need for Engineering Education in Texas*. Specifically, the programs we plan to develop:

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<sup>1</sup> Direct impact on the economy per student as stated in A&M-Corpus Christi, 2015 Economic Impact Report



- Will be aligned with projected workforce needs—for example, civil engineering will serve the workforce need of construction industry and industrial engineering will support the Port of Corpus Christi and related industries as students are trained to become first-line supervisors of production and operation;
- Will support the University and A&M System's autonomous systems initiatives, specifically the UAS program, which is a four-billion-dollar energy industry;
- Will take advantage of the FAA designation of Lone Star UAS Center of Excellence and Innovation (LSUASC) to provide unique education and research opportunities to engineering students. LSUASC is one of six FAA designated sites in the U.S. and one of three sites led by academic institutions of higher learning;
- Will emphasize recruitment of underrepresented students and faculty, including Hispanics, African-Americans, and females;
- Will be built from the ground up to ensure transfer student success, by including early and consistent collaboration with our main transfer partner, Del Mar College, and by following relevant Texas High Education Coordinating Board enabled transfer compacts in the specific engineering disciplines;
- Will include a strong effort to recruit Texas and U.S. students into these programs building on local and regional initiatives;
- Will include initiatives to increase high school student's inherent interest in engineering as occupation and major, to be part of an effort to increase the level of student attainment of college and career readiness.

All Engineering curricula will provide flexibilities for students to pursue a secondary focus area that supports individual student's aspirations and career goals, and to take advantage of the unique education and research opportunities offered by the FAA designation of LSUASC a UAS Test Site. During the 4-year degree plan, students can elect to complete a certificate program in UAS applications, or pursue in-depth study of specific areas of the major. In addition, eligible students can take 3 MBA fundamental courses as the electives, which will satisfy both the BS and MBA degree requirements; thus students can complete a BS degree in 4<sup>th</sup> year and an MBA degree in 5<sup>th</sup> year of study.

The goal of the engineering programs is to build a teaching and research program to provide students with a high quality education in the theory and practice of engineering, by adopting a multidisciplinary approach, encouraging innovation through the capstone design projects, cultivating entrepreneurship, and addressing the workforce needs of the state. Engineering students will participate in the internship programs at TAMU-CC Coastal Bend Business Innovation Center. Students will submit their capstone design projects in a Business Plan Competition and gain invaluable experiences in teamwork, communication skills, professionalism and ethics, innovation, and business practices. Engineering faculty will serve as technical advisors to student capstone projects as well as to clients of the Innovation Center, cultivating a supportive environment of entrepreneurship on campus. The proposed programs will also support the University and A&M System's pursuits of autonomous industry UAS research, development, testing and business development. Online options of selected civil engineering and industrial engineering technical elective courses will be developed and offered to South Texas institutions. Internships with local businesses in civil and industrial engineering will be developed to help create an education to job pipeline for students, encouraging them to stay in the Coastal Bend following graduation.

The educational objectives of this program are to produce graduates who will:

- Practice the respective engineering discipline successfully within commonly accepted professional standards,
- Be cognizant of ethical responsibilities as professionals,
- Be aware of technical issues and potential consequences in contemporary society, and
- Become a leader of her/his chosen profession.

### Needs Statement

The need for additional engineering graduates in the Coastal Bend Region is supported by a wide range of evidence, including Texas Workforce Commission projections, independent studies, Coordinating Board reports, surveys of local industry, and regional plans to boost local industry over and above recent trend lines. The enclosed letter of support from Workforce Solutions outlines the current and future need for civil and industrial engineers in the Coastal Bend. The recent investments in the area exceed \$32 billion. In addition, a venture related to natural gas exploration has been developed. The need for additional engineering graduates is supported by multi-billion investments in such projects as the Tianjin Pipe Company manufacturing facility, the voestalpine AG's plant of two million tons of high-quality hot briquetted iron, and the world largest PET integrated plant by M&G Chemicals; all in Corpus Christi Metropolitan Statistical Area. The location of the UAS program at the U.S. Navy base two miles from the TAMU-CC and the reversal of the Seaway pipeline between Cushing Oklahoma and the Gulf Coast that will bring cheaper oil to Coastal refineries further increase the workforce demand of engineers in our region. The Port of Corpus Christi further supports this project, as illustrated in their enclosed letter of support. The expansion of the Port of Corpus Christi, for example, the \$550-million project of Martin Midstream Partners, the multi-billion liquefied natural gas terminal planned by Cheniere Energy Inc., and completion of the Panama Canal expansion project (93.8% completion as of 30 September 2015, <http://micanaldepanama.com/expansion/>) will also increase the demand of engineers.

Texas Workforce Commission data show that there is a sustained need in the Coastal Bend region for additional civil and industrial engineers, as evidenced by workforce projections in these and closely related areas. Texas Workforce Commission employment projections for the Coast Bend Area is summarized in Table 1.

Table 1. Data for the Coastal Bend Workforce Development Area<sup>2</sup>

Occupation	Average Annual Employment: 2008	Average Annual Employment: 2018	Growth Rate	Average Annual Job Openings (New and Replacement)
Related to <b>Industrial Engineering</b>				
<i>Industrial Engineers</i>	220	250	13.6%	10
Industrial Production Managers	210	200	-4.8%	5

<sup>2</sup> Employment projections for the Coastal Bend Workforce Development Area by the Texas Workforce Commission



Computer & Information Systems Managers	210	250	19%	10
Plant & System Operators	1,780	2010	12.9%	65
Health & Safety Engineers	90	100	11.1%	0
<b>Total</b>	<b>2,510</b>	<b>2,810</b>	<b>12.3%</b>	<b>90</b>
Related to <b>Civil Engineering</b>				
<i>Civil Engineers</i>	910	1,110	22.0%	35
Environmental Engineers	50	60	20%	0
Supervisors/Managers of Construction & Extraction Workers	2,830	3,110	9.9%	85
Construction & Building Inspectors	150	170	13.3%	10
<b>Total</b>	<b>3,940</b>	<b>4,450</b>	<b>12.9%</b>	<b>130</b>

The demand for engineers in workforce remains strong. A survey of 6 companies (January 2015) that recently hired TAMU-CC Mechanical Engineering graduates is summarized in Table 2. Although this survey is not inclusive of all companies hiring engineers in the Coastal Bend Area, it highlights a very high demand for industrial engineers.

Table 2. Survey of 6 Companies at Corpus Christi

				Next 4 Years		Next 10 Years	
Company	Headquarter Location	Number of Engineers in Coastal Bend	Total Number of Employees	Civil	Industrial	Civil	Industrial
A	Corpus Christi, TX	40	270	1 to 3	0	1 to 3	0
B	Corpus Christi, TX	35	60				
C	Huntsville, AL	3	380	0	4 to 6	0	4 to 6
D	Corpus Christi, TX	1	40		1 to 3		1 to 3
E	Corpus Christi, TX	15	200	0	4 to 6	0	7 to 10
F	Corpus Christi, TX	20	2500		7 to 10		7 to 10
<b>Total</b>				<b>1 to 3</b>	<b>16 to 25</b>	<b>1 to 3</b>	<b>19 to 29</b>

Texas Workforce Commission. It is estimated by the Texas Workforce Commission that in order to have sustained growth Texas will need about 88,000 more engineers and computer scientists by 2020 for a decade, i.e., 2010 to 2020. The number suggests that Texas will need to increase engineering and computer science degree production about 9,000 per year, which nearly doubles current degree production capacity. It is also noted that civil engineering and industrial engineering are among the top five workforce needs.

Table 3 summarizes 5-year enrollment projections. The enrollment estimates are conservative compared to actual enrollment numbers in the mechanical engineering degree program. Mechanical engineering program is now in its 6<sup>th</sup> year and has an enrollment of 400 students, almost triple the initial projection. Some of current students enrolled in electrical engineering technology and mechanical engineering technology, mechanical engineering, and electrical engineering (over 500 students in those programs combined), will transfer to civil engineering or industrial engineering, as well as some in pre-engineering students (more than 100 students). The projections for civil and industrial engineering were based on the assumptions that there will be 10 transfer students for Year 1, followed by 5 transfer students per year thereafter. The recruitment targets for civil engineering will be 15 new students for Year 1, 25 new students in Year 2, and 30 new students for subsequent years. The corresponding numbers will be 15, 20, and 25 for industrial engineering. The enrollment projections also assume an attrition rate of 30% between Year 1 and Year 2, and also between Year 2 and Year 3.

Table 3. Projection of 5-year Enrollment

YEAR	1	2	3	4	5
Civil Engineering Head Count	25	47	75	101	127
Industrial Engineering Head Count	25	42	65	88	110

It is noted that the student interest survey suggests that we should expect more than 25 students for each major for Year 1 and beyond. All students will be full-time.

### **Impact Statement**

TAMU-CC began its Mechanical Engineering Program in 2009 to provide skilled engineers to the area workforce. Type A Board funding helped start this program with \$1 million in funds, which allowed us to hire top-notch faculty and purchase specialized equipment. The return on that investment has been huge, as seen in the matching funds totaling \$5 million and a direct economic impact of \$971,688, to date. Twelve jobs have been produced from the addition of that program with an average salary of \$80,974, and more than 400 students were enrolled in the Fall of 2015, which brought \$15.9 million directly to the Coastal Bend. Thus far, many of the 81 program graduates have been hired throughout the Coastal Bend and Texas as the next generation of engineering leaders because TAMU-CC prepares students to work professionally in both thermal and mechanical systems areas.

The Electrical Engineering Program at TAMU-CC also received initial support from Type A Board in the amount of \$1 million, and outside matching funds exceeded \$2 million. These matching funds validate the community need of Electrical Engineers. According to the Texas Workforce Commission and the U.S. Department of Labor Statistics, engineers are expected to remain in high demand for years to come. The economic need for local engineers is widely acknowledged and with many Mechanical Engineering Program graduates staying and working in the Corpus Christi area, it is highly likely that Electrical Engineering graduates will do the same.

Based on the success and return on investment of the mechanical and electrical engineering programs and the results of the economic impact report analyzing the impact of civil and industrial



engineering, we anticipate a similarly positive impact with the addition of these two programs. Below are some key data illustrating the impact of civil and industrial engineering. The complete economic impact report is included with this proposal as well.

Capital Development Impacts. Table 4 summarizes capital development impacts through the construction phase, which alone will generate a one-time direct employment impact equivalent to 5 full-time job years, and \$276,007 in income earnings. Including indirect effects, the construction phase of the facilities will generate a total impact of 7 job years and \$340,011 in income earnings.

Table 4. Capital Development Impacts: Construction Phase

CONSTRUCTION PHASE			
EMPLOYMENT IMPACT		INCOME EARNINGS IMPACT	
Direct	Direct & Indirect	Direct	Direct & Indirect
5 Jobs	7 Jobs	\$276,007	\$340,011

Direct Permanent Impacts: Faculty & Graduates. Table 5 summarizes the direct impacts from faculty. These new faculty members are also expected to generate a total of \$3 million each year in research through state and federal funding sources. The direct economic impact from the new faculty is the sum of their incomes and the external funds, which equals \$3.56 million.

Table 5. Direct Permanent Impacts: Faculty

ANNUAL IMPACT FROM OPERATIONS (FIRST 5-YEAR AVG.)				
<u>Program</u>	<u>Faculty</u>	<u>Salary Earnings</u>	<u>External Research Funds</u>	<u>Earnings &amp; External Funds</u>
Civil Engineering	2	\$170,000	\$1,000,000	\$1,170,000
Industrial Engineering	4	\$390,000	\$2,000,000	\$2,390,000
<b>Programs Total</b>	<b>6</b>	<b>\$560,000</b>	<b>\$3,000,000</b>	<b>\$3,560,000</b>

Table 6 summarizes the direct impacts from graduates. When fully developed, the two degree programs are expected to generate a total of 60 graduates each year, 45% of whom are expected to stay and seek employment in Corpus Christi. Based on the current average wage earnings for civil and industrial engineers, those local graduates will collectively earn \$2 million annually, or \$81 million in lifetime earnings.

Table 6. Direct Permanent Impacts: Graduates

ANNUAL IMPACT ON INCOME EARNINGS OF GRADUATES			
<u>Program</u>	<u>Graduates</u>	<u>Annual Income</u>	<u>Lifetime Income</u>
<b>Civil Engineering</b>			

Total Graduates	32	\$2,278,083	\$91,123,314
Graduates in Corpus Christi	14	\$1,025,137	\$41,005,491
<b>Industrial Engineering</b>			
Total Graduates	28	\$2,239,426	\$89,577,026
Graduates in Corpus Christi	13	\$1,007,742	\$40,309,661
<b>Programs Total</b>			
Total Graduates	60	\$4,517,508	\$180,700,340
Graduates in Corpus Christi	27	\$2,032,879	<b>\$81,315,153</b>

Table 7 summarizes direct impacts from faculty and graduates. The new facilities in operation will directly benefit the local economy through employment of new faculty under the two new degree programs and employment of their graduates locally. Including indirect effects, the employment impact is 58 job positions and over \$117 million in wage earnings.

Table 7. Direct Permanent Impacts: Faculty and Graduates

EMPLOYMENT IMPACT			WAGE EARNINGS IMPACT		
<u>Direct Jobs</u>		<u>Direct &amp; Indirect Jobs</u>	<u>Direct Impact</u>		<u>Direct &amp; Indirect Impacts</u>
Faculty	Graduates in Corpus Christi	Faculty & Graduates Total	Faculty	Graduates in Corpus Christi	Faculty & Graduates Total
6	27	58	\$3,560,000	\$81,315,153	\$117,365,817

Direct Permanent Impacts: Students. Table 8 summarizes the direct impacts from students. The two new degree programs will become fully developed within five years with a projected total enrollment of 237 students. Each student generates an estimated total local economic impact of \$39,800. The total economic impact associated with the increased student enrollment (including their spending locally, and state and federal funding for TAMU-CC's operations) is estimated at \$9.4 million annually.

Table 8. Direct Permanent Impact: Students

TOTAL ECONOMIC IMPACT FROM STUDENT ENROLLMENT		
Program	Students	Economic Impact
Civil Engineering	127	\$5,054,600
Industrial Engineering	110	\$4,378,000
New Programs Total	237	\$9,432,600

Fiscal Impacts. Table 9 summarizes the total direct and indirect economic impacts associated with the two new programs. The two new engineering programs will benefit the local economy through



increased wage earnings of TAMU-CC faculty and their graduates living locally, and additional local spending due to increased student enrollment. The total (direct and indirect) economic impacts associated with the two new programs will in turn generate an estimate of \$12.6 million annually in additional local sales and property tax revenues.

Table 9. Fiscal Impacts

ANNUAL FISCAL IMPACT FROM OPERATIONS	
Impact on Local Sales & Property Taxes:	
Faculty	\$489,667
Graduates	\$11,184,654
Students Enrolled in Programs	\$938,256
TOTAL	\$12,612,577

Return on Investment. Table 10 summarizes the Return on Investment projections. Given the proposed Type A fund of \$2 million for capital investment, the two new TAMU-CC degree programs directly associated with the new facilities will generate an estimated total of \$12.6 million annually in additional tax revenues for the local taxing entities in Corpus Christi. The Return on Investment for this one-time Type A funding is 631%, or an ROI ratio of 6.31. This ROI ratio implies that \$1 in community investment generates a permanent return more than \$6 *every year* into the future.

Table 10. Return on Investment Projections

RETURN ON INVESTMENT	
Local Tax Revenues	\$12,612,577
Type A Fund	\$2,000,000
ROI	6.31



# WORKFORCE SOLUTIONS

## of the Coastal Bend

*Skills. Jobs. Dreams.*

April 26, 2016

Dr. Flavius Killebrew, President  
Texas A&M University-Corpus Christi  
6300 Ocean Drive  
Corpus Christi, TX 78412

Dear Dr. Killebrew,

Workforce Solutions of the Coastal Bend wholly supports the planned expansion of the engineering program at Texas A&M University - Corpus Christi. Expanding the program to include civil and industrial engineering will provide students with additional career options and employers with a pipeline of highly skilled workers.

There are 1,896 engineers in the 12-county Coastal Bend region earning a median wage of \$45.29/hr. That's more than double the local median wage for all occupations, \$17.98/hr. Over the last 10 years, the number of engineering jobs have increased regionally by 20.2% and by 17.6% in Texas.

Our mission is to invest in our regional economic success through access to jobs, training, and employer services. Ensuring our community is well trained and meets the needs of industry is fundamental to the continued success of the region. This program expansion will provide greater opportunities for the students and future leaders of our community, Texas, and the nation.

Sincerely,

Ken Treviño  
President/CEO

Learn Skills. Land Jobs. Live Dreams.

Workforce Solutions of the Coastal Bend

520 N. Staples / Corpus Christi, Texas 78401 / Phone 361.885.3016 Fax 361.885.3025

[www.workforcesolutionscb.org](http://www.workforcesolutionscb.org) / 1-888-860-JOBS (5627)

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John P. LaRue  
EXECUTIVE DIRECTOR

April 16, 2016

Dr. Flavius Killebrew  
Texas A&M University-Corpus Christi  
6300 Ocean Dr.  
Corpus Christi, TX 78412

Dear Dr. Killebrew,

On behalf of the Port of Corpus Christi, please accept this letter in support of Texas A&M University-Corpus Christi's request for \$2 million to the Corpus Christi Business and Job Development Corporation to support expansion of the University's engineering program into civil and industrial engineering.

The Port of Corpus Christi has supported Texas A&M University-Corpus Christi's engineering program since the beginning of the mechanical engineering program in 2009. The addition of electrical engineering in 2015 and now the further expansion into civil and industrial engineering not only further strengthens the University's program, but also adds significant value to the Coastal Bend community as well.

For the Port of Corpus Christi, the addition of industrial engineering is key if we are going to be able to meet the workforce needs of the Port's anticipated growth and expansion. With new businesses under construction – and investments totaling \$30 Billion – Port Corpus Christi is preparing its infrastructure to handle the influx of cargo movements by land, rail or sea. This rapid growth around the Port is translating in career opportunities particularly in the engineering field.

We value our partnership with Texas A&M University-Corpus Christi and know that support from the Corpus Christi Business and Job Development Corporation for civil and industrial engineering programs will create jobs, increase economic development opportunities, and benefit the Coastal Bend as a whole.

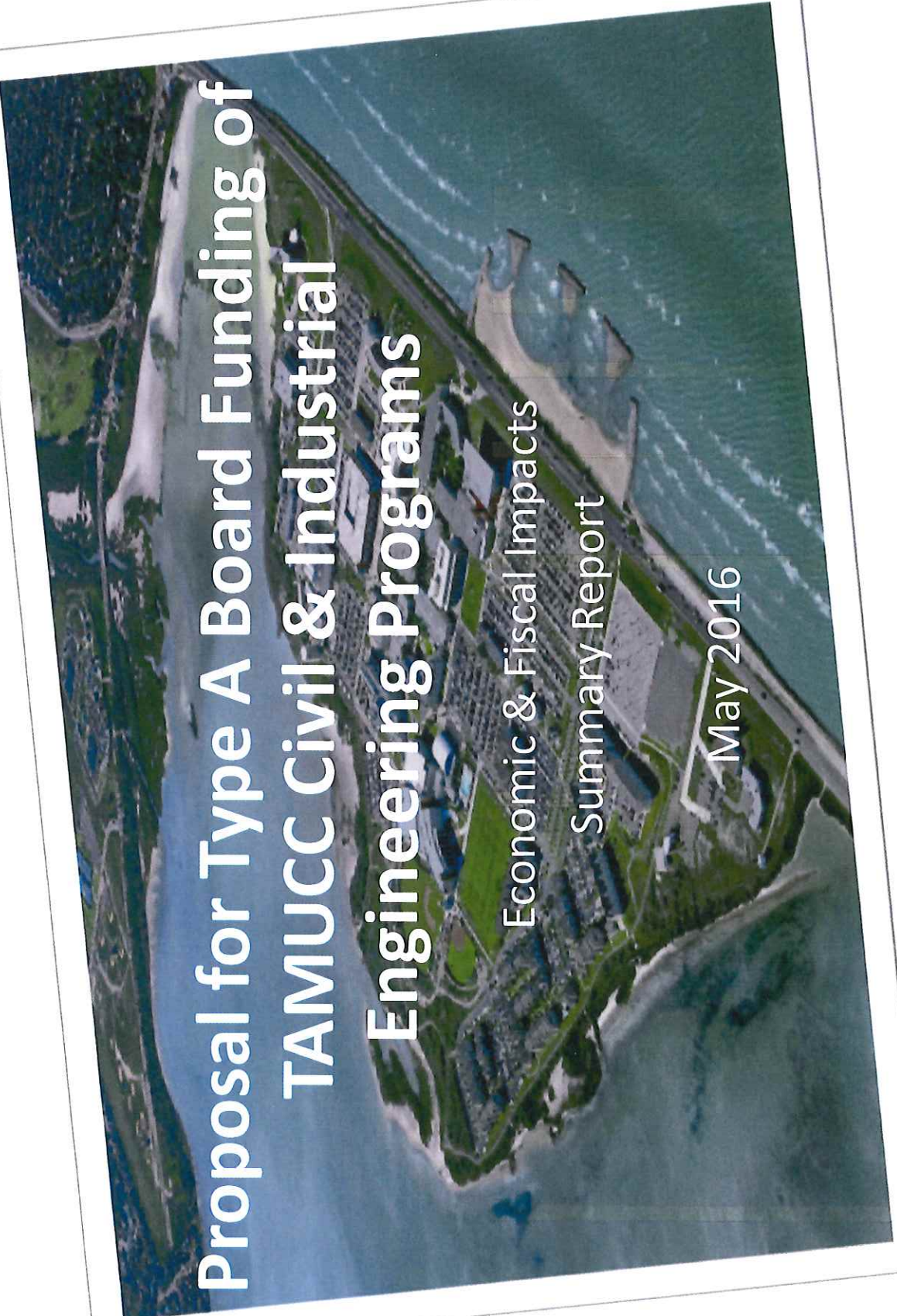
Thank you for being responsive to local industry needs and working to add programs that bring value and address workforce needs to our community.

Sincerely,

A handwritten signature in blue ink that reads "John LaRue".

John LaRue  
Executive Director  
Port of Corpus Christi



An aerial photograph of a coastal industrial facility, likely a refinery or chemical plant. The facility features numerous large, cylindrical storage tanks, several large industrial buildings with flat roofs, and extensive piping. The plant is situated along a body of water, with a sandy beach and some greenery visible in the foreground. The sky is clear and blue.

# Proposal for Type A Board Funding of TAMUCC Civil & Industrial Engineering Programs

Economic & Fiscal Impacts  
Summary Report

May 2016



# Funding Proposal

- TAMUCC is proposing to the City of Corpus Christi's Type A Board for a total of \$2 million in funding the development of new Civil Engineering and Industrial Engineering programs.
- The amount of funds will help cover the capital expenditures for constructing lab and instructional facilities and equipment for the proposed degrees in Civil Engineering and Industrial Engineering.



# Justification for New Programs

- Completions of educational and training requirements for both civil engineers and industrial engineers in the Coastal Bend region are insufficient to meet the current and especially future workforce demands for those occupations.
- The two occupations command substantially high average annual wage earnings: >\$72,000 for civil engineers; >\$80,000 for industrial engineers.



# Capital Development Impacts

## CONSTRUCTION PHASE

<u>EMPLOYMENT IMPACT</u>		<u>INCOME EARNINGS IMPACT</u>	
Direct Jobs	Direct & Indirect Jobs	Direct Impact	Direct & Indirect Impacts
5	7	\$276,007	\$340,011

- Construction of the facilities alone will generate a one-time direct employment impact equivalent to 5 full-time job years, and \$276,007 in income earnings.
- Including indirect effects, the construction phase of the facilities will generate a total impact of 7 job years and \$340,011 in income earnings.



# Direct Permanent Impacts: Faculty

## ANNUAL IMPACT FROM OPERATIONS (FIRST 5-YEAR AVG.)

Program	Faculty	Salary Earnings	External Research Funds	Earnings & External Funds
Civil Engineering	2	\$170,000	\$1,000,000	\$1,170,000
Industrial Engineering	4	\$390,000	\$2,000,000	\$2,390,000
<b>Programs Total</b>	<b>6</b>	<b>\$560,000</b>	<b>\$3,000,000</b>	<b>\$3,560,000</b>

- The new facilities will be operated primarily by new TAMUCC faculty for the two engineering programs.
- TAMUCC will hire a total of 6 new faculty members to run the two degree programs with salary compensations totaling \$560,000 annually.
- Those new faculty members are also expected to generate a total of \$3 million each year in research funding from external sources at the federal or state level.
- The direct economic impact from the new faculty is the sum of their incomes and the external funds, which equals \$3.56 million.



# Direct Permanent Impacts: Graduates

## ANNUAL IMPACT ON INCOME EARNINGS OF GRADUATES

Program	Graduates	Annual Income	Lifetime Income
<b>Civil Engineering</b>			
Total Graduates	32	\$2,278,083	\$91,123,314
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<b>Programs Total</b>			
Total Graduates	60	\$4,517,508	\$180,700,340
Graduates in Corpus Christi	27	\$2,032,879	<b>\$81,315,153</b>

- When fully developed, the two degree programs are expected to generate a total of 60 graduates each year, 45% of whom are expected to stay and seek employment in Corpus Christi.
- Based on the current average wage earnings for civil and industrial engineers, those local graduates will collectively earn \$2 million annually, or \$81 million in lifetime earnings.



# Direct Permanent Impacts: Faculty & Graduates

<u>EMPLOYMENT IMPACT</u>			<u>WAGE EARNINGS IMPACT</u>		
Direct Jobs		Direct & Indirect Jobs	Direct Impact		Direct & Indirect Impacts
Faculty	Graduates in Corpus Christi	Faculty & Graduates Total	Faculty	Graduates in Corpus Christi	Faculty & Graduates Total
6	27	58	\$3,560,000	\$81,315,153	\$117,365,817

- The new facilities in operation will directly benefit the local economy through employment of new faculty under the two new degree programs and employment of their graduates locally.
- Including indirect effects, the employment impact is 58 job positions and over \$117 million in wage earnings.



# Direct Permanent Impacts: Students

## TOTAL ECONOMIC IMPACT FROM STUDENT ENROLLMENT

Program	Students	Economic Impact
Civil Engineering	127	\$5,054,600
Industrial Engineering	110	\$4,378,000
<b>New Programs Total</b>	<b>237</b>	<b>\$9,432,600</b>

- The two new degree programs will become fully developed within five years with a projected total enrollment of 237 students.
- Each student generates an estimated total local economic impact of \$39,800 (*2015 TAMUCC Economic Impact Report*).
- The total economic impact associated with the increased student enrollment (including their spending locally, and state and federal funding for TAMUCC's operations) is estimated at \$9.4 million annually.



# Fiscal Impacts

## ANNUAL FISCAL IMPACT FROM OPERATIONS

Impact on Local Sales & Property Taxes:	
Faculty	\$489,667
Graduates	\$11,184,654
Students Enrolled in Programs	\$938,256
<b>TOTAL</b>	<b>\$12,612,577</b>

- The two new engineering programs will benefit the local economy through increased wage earnings of TAMUCC faculty and their graduates living locally, and additional local spending due to increased student enrollment.
- The total (direct and indirect) economic impacts associated with the two new programs will in turn generate an estimate of \$12.6 million annually in additional local sales and property tax revenues.



# Return on Investment

RETURN ON INVESTMENT	
Local Tax Revenues	\$12,612,577
Type A Fund	\$2,000,000
<b>ROI</b>	<b>6.31</b>

- Given the proposed Type A fund of \$2 million for capital investment, the two new TAMUCC degree programs directly associated with the new facilities will generate an estimated total of \$12.6 million annually in additional tax revenues for the local taxing entities in Corpus Christi.
- The Return on Investment for this one-time Type A funding is 631%, or an ROI ratio of 6.31.
- This ROI ratio implies that \$1 in community investment generates a permanent return more than \$6 *every year* into the future.